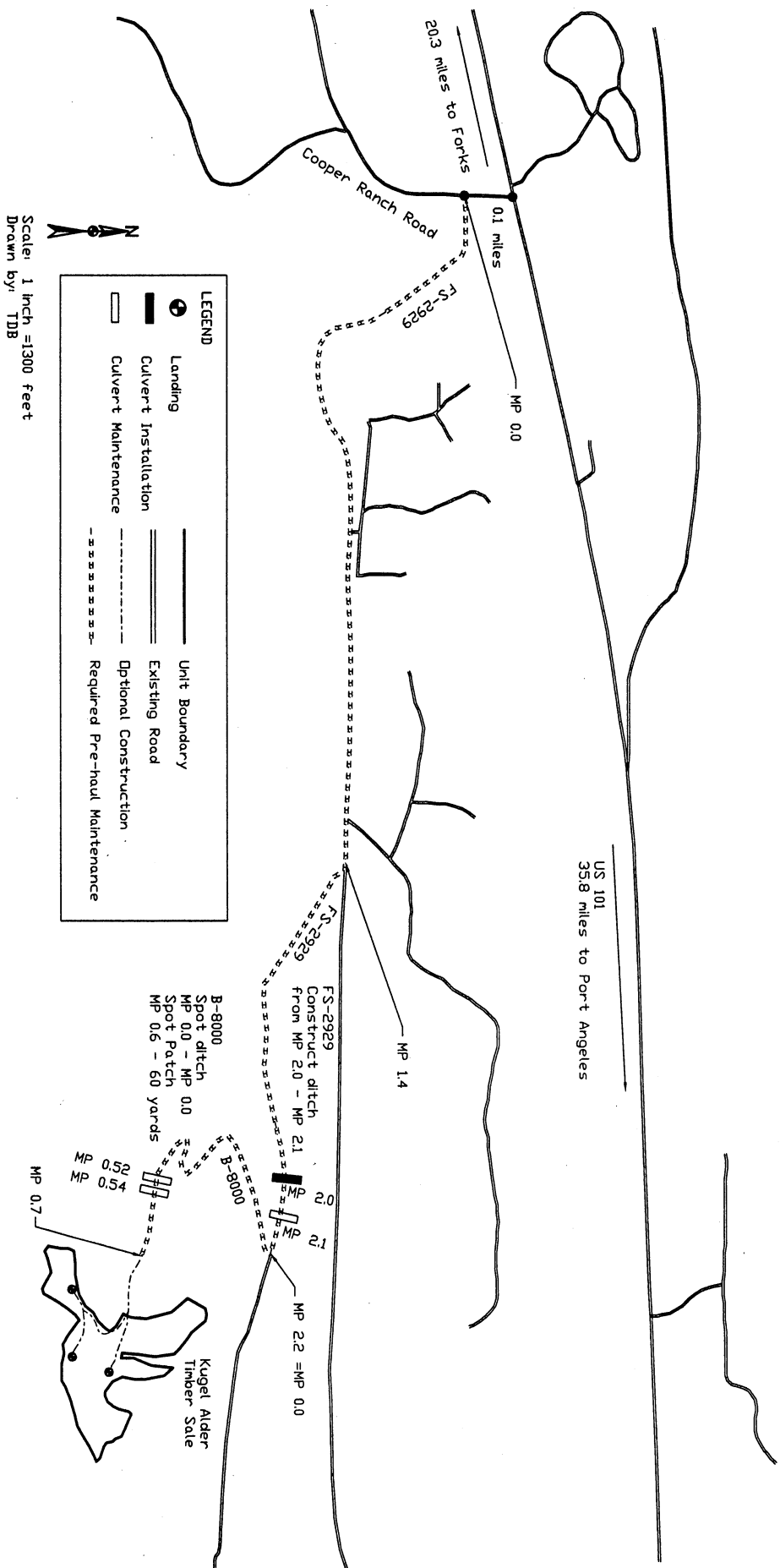
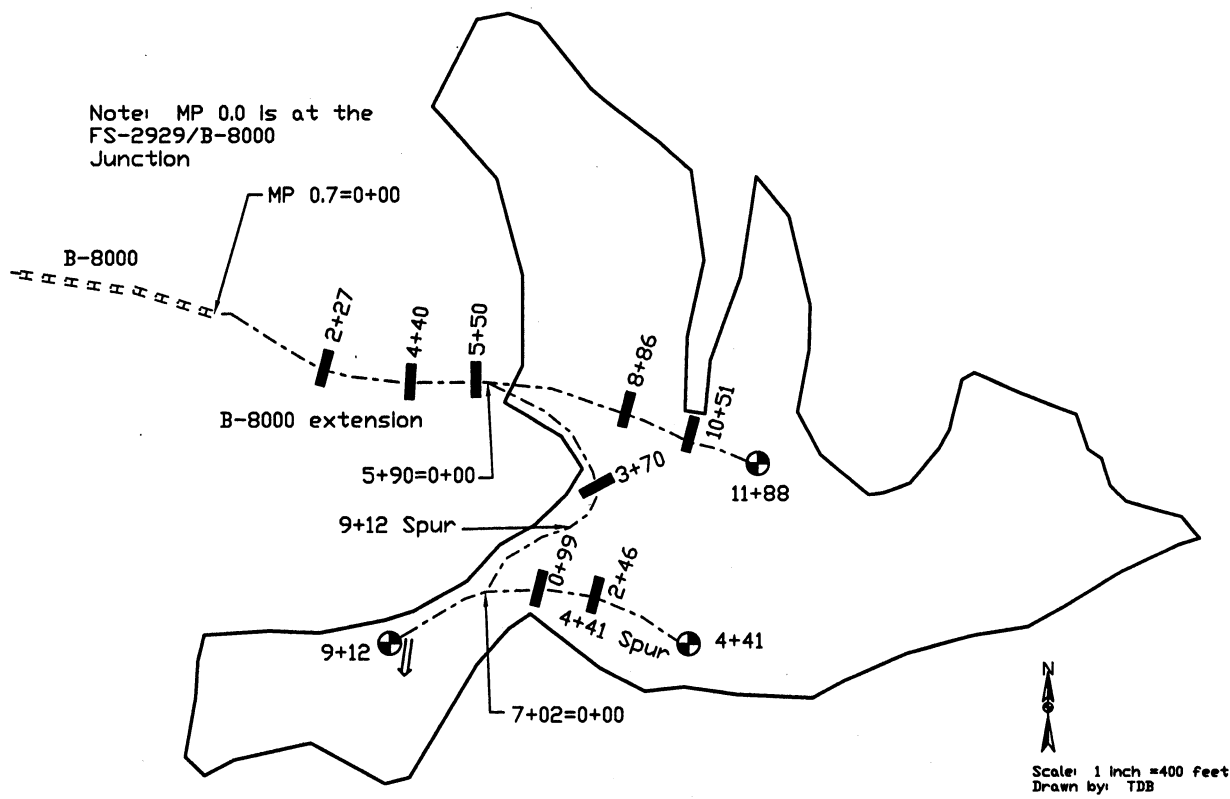


Kugel Alder Timber Sale Road Plan Map 1 of 2 December 02, 2004



Kugel Alder Timber Sale
 Road Plan Map 2 of 2
 December 02, 2004



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

SCOPE OF PROJECT

This project includes, but is not limited to new construction including: clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, landing construction, acquisition and installation of drainage structures, and hauling and application of rock.

This project also includes, but is not limited to pre-haul and post-haul maintenance of all roads listed as Purchaser Maintenance under Clause C-50.

Purchaser maintenance shall consist of reshaping the roadway surface with a grader, cleaning ditches to their original construction configuration, removing all woody debris and slash from ditch lines and ditchouts and repairing or replacing any drainage structures damaged by the Purchaser during the course of the sale.

This work shall be completed prior to the start of timber haul and again at the completion of use.

This project also includes, but is not limited to pre-haul maintenance including:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
FS-2929	2.2 miles	Construct ditch from MP 2.0 to MP 2.1 according to the Contract Administrator. Clean culverts as listed on the Culvert List. Grade and shape running surface.
B-8000	0.7 miles	Spot ditch from MP 0.0 to MP 0.7 according to the Contract Administrator. Clean culverts as listed on the Culvert List. Apply rock as listed on the Rock List. Grade and shape running surface.

SECTION 1 - GENERAL CLAUSES

1.1-1
Clauses in this plan apply to all construction or reconstruction or pre-haul maintenance including landings unless otherwise noted.

1.1-2
Construction or reconstruction or pre-haul maintenance of the following road/s is required. All road/s shall be constructed on the State's location and in accordance with the Road Plan.

<u>Road</u>	<u>Length</u>	<u>Type</u>
FS-2929	MP 0.0 – MP 2.2	Pre-haul maintenance
B-8000	MP 0.0 – MP 0.7	Pre-haul maintenance

1.1-3
Construction or reconstruction or pre-haul maintenance of the following road/s is not required. **If the Purchaser elects to use any of these roads, they shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.**

<u>Road</u>	<u>Length</u>	<u>Type</u>
B-8000 extension	11.88 stations	construction
9+12 Spur	9.12 stations	construction
4+41 Spur	4.41 stations	construction

1.1-4
Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted, in writing, to the Contract Administrator for consideration. Submitted plans must be approved before construction begins.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and unstable soil.

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.2-2

Purchaser shall not use roads constructed or reconstructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the Contract Administrator.

1.2-3

All roads shall be constructed using track mounted hydraulic excavators unless otherwise authorized, in writing, by the Contract Administrator.

1.3-2

Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

1.4-2

The following roads shall be constructed in accordance with construction stakes.

<u>Road</u>	<u>Stations</u>
B-8000 extension	0+00 – 2+70

1.4-3

Construction stake reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P's until all moved or damaged R.P's are reset.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 6 inches dbh or over 20 feet high between the marked right-of-way boundaries and within waste areas or if not marked in the field, between clearing limits specified on Typical Section Sheet.

2.1-3

Right-of-way timber shall not be decked within the grubbing limits or in locations that interfere with the construction of the road prism, as defined by the Contract Administrator. Right-of-way timber shall not be decked in locations that impede drainage.

ROAD PLAN

SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

SECTION 3 - GRUBBING

3-1 All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed.

3-2 Grubbing limits are defined as the entire area between external limits shown on the Typical Section Sheet.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1 Right-of-way debris is defined as all vegetative material larger than one cubic foot in volume, within the clearing limits.

4.1-2 All right-of-way debris disposal shall be completed prior to application of rock.

4.2.3-3 Right-of-way debris shall not be placed against standing timber.

4.2.3-4 Right of way debris shall be scattered outside the grubbing limits.

SECTION 5 - EXCAVATION

5.1-1 Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

5.1-3 The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

Favorable Grade Adverse Grade Minimum Curve Radius

18% 12% 60 feet

- Changes in road grade shall not exceed 7%, except as required in this clause.
- Adverse grades on curves shall not exceed 10 percent of the curve radius.
- Favorable grades through switchbacks shall not exceed 12%.
- Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.
- The switchback is defined as, the curved segment of road, between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.
- Transition grades required to meet switchback grade limitations, shall be constructed on the tangents preceding and departing from the switchbacks.

5.1-4 Extra widening on the inside of curves shall be:

2 feet extra	80 -100 foot radius curve
4 feet extra	60 - 80 foot radius curve

5.1-5 Curve widening where required, shall be added to the inside of curves.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table (except as construction staked or designed):

Material Type	Excavation Slope Ratio
Common Earth (on side slopes to 55%)	1:1
Common Earth (55% to 70% sideslopes)	¾:1
Common Earth (on slopes over 70%)	½:1
Fractured or loose rock	½:1
Hardpan or solid rock	¼:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Embankments shall be widened as follows:

Height at Shoulder	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table:

Material Type	Embankment Slope Ratio
Common earth and rounded gravel	1 ½:1
Angular rock	1 ¼:1
Sandy soils	2:1

5.1-12

Organic material shall be excluded from embankment shown on Typical Section Sheet and from waste material deposited on slopes in excess of 40 percent.

5.1-15

Except as listed in clause 5.1-16 (endhaul/overhaul), waste material may be deposited adjacent to the road prism on side slopes up to 45 % if the material is compacted and more than 100 feet away from live streams. On side slopes of 45% or more, all excavation shall be end hauled or pushed to designated embankment sites. All waste embankments shall be compacted in horizontal layers not exceeding 2 feet.

5.1-16

On the following road/s full bench construction shall be utilized with all excavated material end-hauled to designated waste areas. This includes material excavated for landings.

<u>Road</u>	<u>Endhaul/Overhaul</u>	<u>Waste Area Location</u>
	<u>From To</u>	
B-8000 extension	0+00 – 2+70	Adjacent B-8000/FS-2929 Junction and as directed by the Contract Administrator.
B-8000 extension	4+10 – 4+70	Adjacent the B-8000/FS-2929 Junction and as directed by the Contract Administrator.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

5.1-19

Select borrow shall be used at the following locations:

<u>Road</u>	<u>Stations</u>	<u>Source</u>
B-8000 extension	4+10 - 4+70	Baby Bear Pit

5.1-21

Waste material shall not be deposited within 100 feet of a live stream, wetland, or wetland management zone.

5.1-23

Turnout locations noted on this plan are approximate. Location shall be adjusted to fit final subgrade alignment and sight distances.

5.1-24

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings.

5.2-1

Pioneering operations shall not undercut the final cut slope, deposit excavated material outside the right-of-way limits or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-1

Silt-bearing runoff, as defined by the Contract Administrator, shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds or other methods to be approved, in writing, by the Contract Administrator.

5.5-4

Constructed subgrades shall be compacted full width (except ditch) prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 12,000 pounds. Three complete passes shall be made at a maximum operating speed of 3 m.p.h.

5.5-5

Finished subgrade shall be crowned as shown on the Typical Section Sheet. Grade and compact to a uniform, firm, rut-free surface to ensure surface runoff in an even unconcentrated manner.

SECTION 6 - DRAINAGE

6.2.1-1

Purchaser shall furnish, install and maintain corrugated polyethylene and/or aluminized steel Type 2 (ASTM A929, A760, A796, AASHTO M274, M36) pipe as designated on Culvert List. Culvert and flume lengths shall be varied to fit as built conditions subject to written approval by the Contract Administrator.

6.2.1-1A

Corrugated polyethylene pipe shall have a corrugated exterior and smooth interior, shall meet ASTM F405, F667 and AASHTO M252, M294 Standard Specifications, and shall be manufactured with high density polyethylene resins.

6.2.1-2

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe. Annular corrugated bands and culverts ends shall be used on aluminized steel pipe.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

6.2.2.1-1

Culvert, downspout, flume and energy dissipator installation shall be in accordance with Culvert and Drainage Specification Detail.

6.2.2.2-1

Any damaged aluminized coating or cut ends shall be retreated with a minimum of 2 coats of zinc rich paint.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent nor more than 10 percent.

6.2.2.4-1

Installation of culverts 36 inches in diameter and over shall be approved in writing by the Contract Administrator prior to making backfill.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed prior to application of rock. Ditches shall drain to culverts, ditchouts and natural drainages.

6.3-2

Shaping the ditchline, culvert headwalls and catchbasins shall be completed prior to application of rock and shall be done in accordance with the Typical Section Sheet and Drainage Specification Detail.

6.4-1

Catch basins shall be constructed to resist erosion. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1

Head walls shall be constructed in accordance with Culvert and Drainage Specification Detail at all cross-drain culverts.

6.5-2

Embankment slopes adjacent to culvert inlets and outlets shall be armored for a distance of two culvert diameters on each side of the pipe and one culvert diameter above the pipe in accordance with Culvert List.

SECTION 7 - ROCK

7.1-1

Rock used under this contract may be obtained from the following pits on State land:

<u>Source # / Name</u>	<u>Location</u>	<u>Rock Type</u>
Baby Bear Pit	Section 26, T30N R12W	Pit Run

7.1-3

Rock for construction and/or reconstruction under this contract may be obtained from commercial sources. Rock sources will be subject to written approval by the Contract Administrator prior to their use.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

7.1-5

Use of all rock sources are subject to written approval from the Contract Administrator.

7.2-1

All pit operations shall be done according to State plans as listed below:

Pit
Baby Bear Pit Plan dated 12/06/04

7.2.1-1

Rock shall meet the following specifications for gradation when placed on the subgrade. No more than 10% of the rock shall be larger than 8 inches in any dimension and no rock shall be larger than 12 inches in any dimension.

7.3-1

The following pit work is required. Work is to be done according to the approved "pit plan" and as directed by the Contract Administrator.

<u>Name</u>	<u>Requirements</u>
Baby Bear Pit	Overburden stripping required to maintain a minimum of 15 feet back from the working face. Slope the South and East Pit faces 1 ½:1 after rock removals. Place waste in designated areas. Slope pit floor towards drain.

7.4.2-1

Apply at least the minimum required rock quantity as shown on the Rock List.

7.4.2-2

Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-7

Turnouts and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8

Each lift of rock shall be shaped as shown on the Rock List and shall be uniform, firm, rut-free and shaped to ensure surface runoff in an even unconcentrated manner.

7.4.3-2

On constructed roads ballast shall be spread and compacted full width in lifts not to exceed 8 inches uncompacted depth. Compaction shall be by smooth drum vibratory roller weighing at least 12,000 pounds. Three complete passes at a maximum speed of 3 m.p.h. shall be made on each lift.

7.4.3-3

Rock shall be spread, shaped and compacted concurrently with rock hauling operations.

ROAD PLAN

ROAD PLAN DATE:
December 3, 2004

CONSTRUCTION CLASS
 NEW CONSTRUCTION - C
 RECONSTRUCTION - R
 PRE-HAUL MAINTENANCE - P

TURNOUT DETAIL (PLAN VIEW)

SECTION VIEW

[illegible]

ROAD PLAN

ROAD PLAN DATE:
December 3, 2004

The diagram illustrates a cross-section of a road structure. It shows a central raised section flanked by sloped shoulders. The central section is composed of three distinct layers: a top layer labeled 'SURFACING', a middle layer labeled 'BALLAST', and a bottom layer labeled 'SUBGRADE'. Dimension lines above the central section indicate the widths of these layers: 'SUBGRADE WIDTH' (the widest, encompassing the entire base), 'BALLAST WIDTH' (the middle layer), and 'SURFACE WIDTH' (the top layer). A centerline symbol (a circle with a cross) is positioned at the base of the central section. The sloped shoulders on either side are also shown with a cross-hatched pattern, indicating they are part of the subgrade structure.

1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed. All depths are compacted depths.
2. Rock slopes shall be 1½ (H) : 1 (V).
3. All rock sources are subject to approval by the Contract Administrator.
4. Rock source 1=Baby Bear Pit

Page 9 of 11

ROAD PLAN

ROAD PLAN DATE:
December 3, 2004

[illegible]

Required Minimum Gauge for Metal Pipe

Page 10 of 11

ROAD PLAN

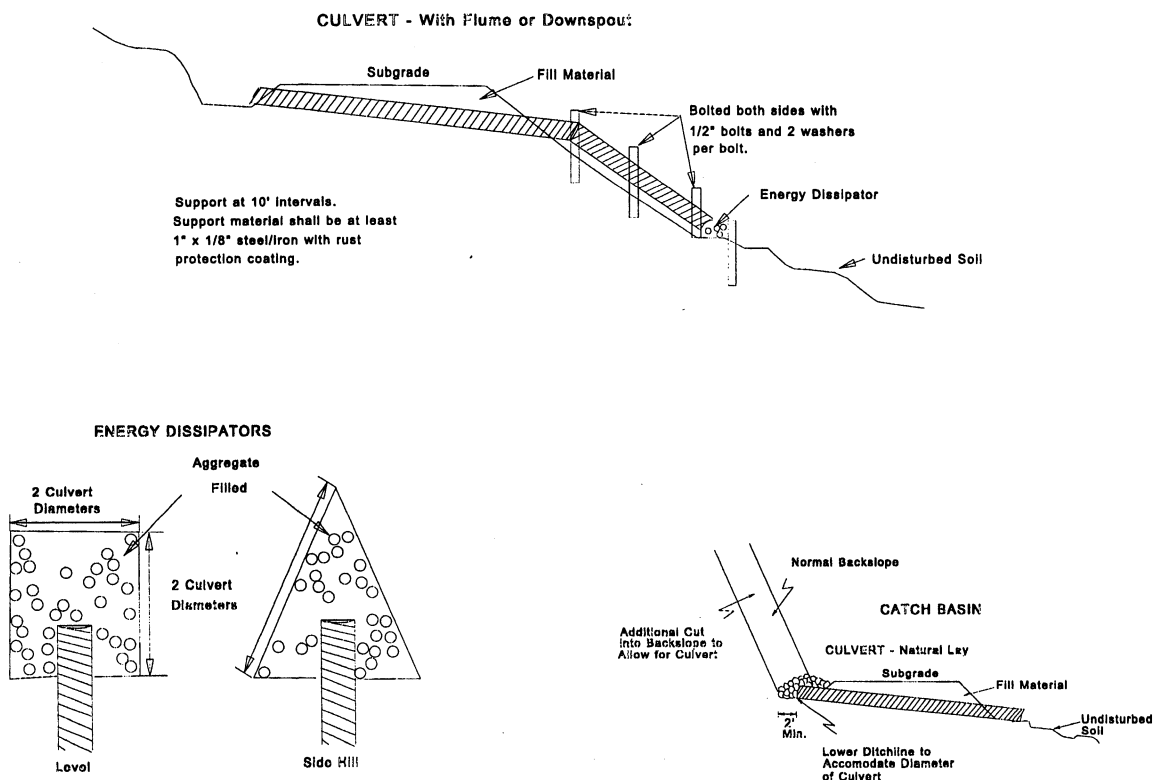
SALE NAME:
Kugel Alder

ROAD PLAN DATE:
December 3, 2004

CULVERT AND DRAINAGE SPECIFICATION DETAIL

INSTALLATION REQUIREMENTS:

1. Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.
2. All bedding material of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill. Crushed stone, gravel or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed $\frac{1}{6}$ pipe diameter or 4", whichever is smaller. All material shall be compacted in six inch layers under the haunches, around the sides and above the pipe to the minimum height of cover.
3. Crushed stone and gravel backfill materials shall be compacted to a level of 90-95% AASHTO standard density. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.

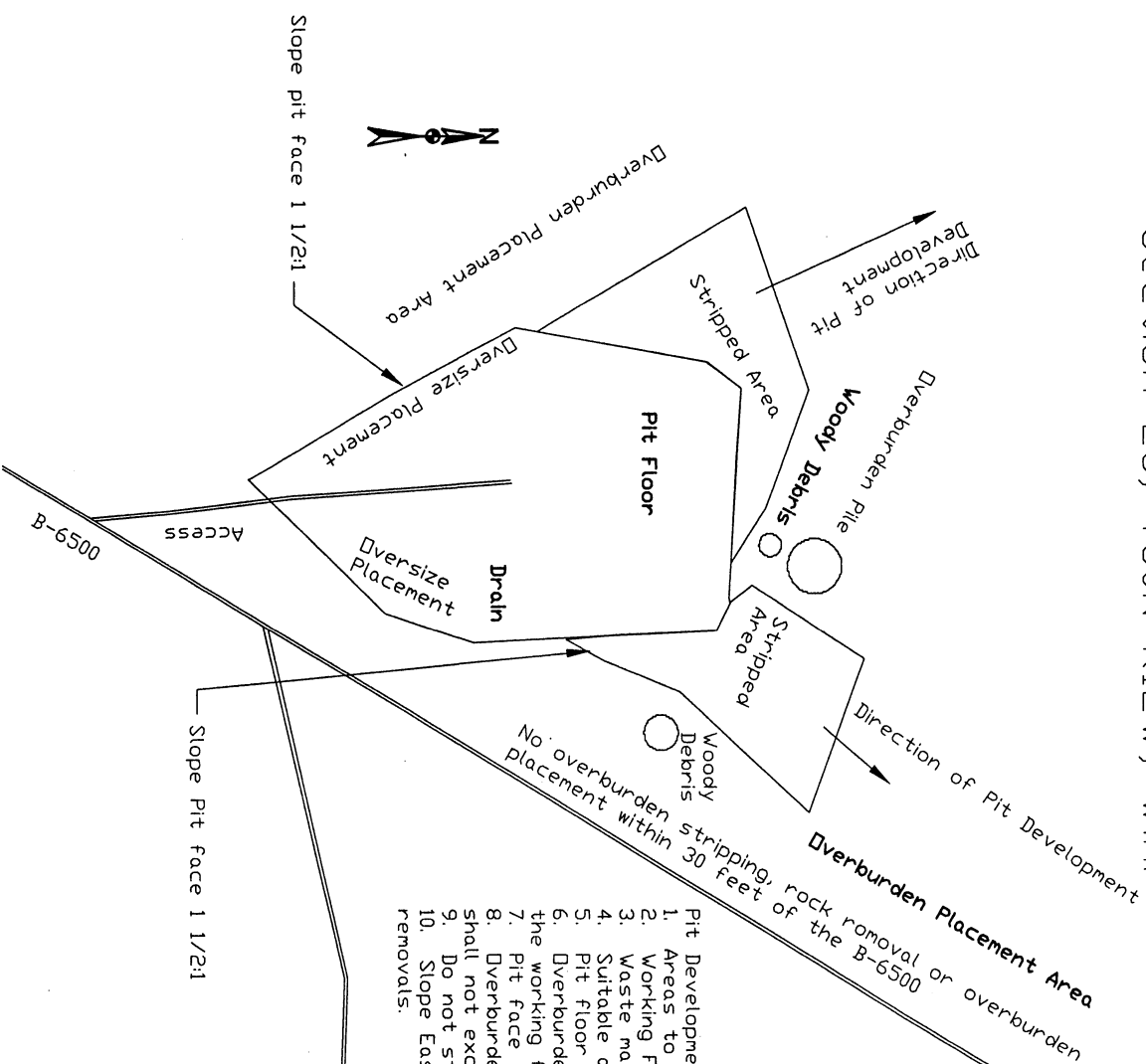


DISSIPATOR SPECIFICATIONS:

Depth: 1 culvert diameter
Aggregate: 6" plus

Pit Plan

Baby Bear Pit
Section 26, T30N R12W, W.M.



- Pit Development Plan 12/06/04
1. Areas to be developed as directed by the Contract Administrator.
 2. Working Face Height shall not exceed 15 feet.
 3. Waste material shall be placed in the designated areas.
 4. Suitable drainage shall be maintained at all times.
 5. Pit Floor to be maintained at a 2% grade towards drain.
 6. Overburden stripping shall be maintained a minimum of 15 feet back from the working face.
 7. Pit face shall be developed to the North and West from the Access Point.
 8. Overburden waste height shall not exceed 15 feet. Woody debris pile height shall not exceed 15 feet and be free from soil.
 9. Do not strip, remove rock or place overburden within 30 feet of the B-6500.
 10. Slope East and South pit faces to a backslope of 1 1/2:1 after rock removals.